

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
5 August 2004 (05.08.2004)

PCT

(10) International Publication Number  
**WO 2004/065498 A3**

- (51) International Patent Classification<sup>7</sup>: **C09D 5/08**
- (21) International Application Number:  
PCT/US2004/001222
- (22) International Filing Date: 16 January 2004 (16.01.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
10/346,374 17 January 2003 (17.01.2003) US  
60/452,843 7 March 2003 (07.03.2003) US
- (71) Applicant (for all designated States except US): **UNIVERSITY OF MISSOURI CURATORS** [US/US]; Office of Technology & Special Projects, University of Missouri System, 475 McReynolds Hall, Columbia MO, Columbia, Missouri 65211-2015 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **STOFFER, James, O.** [US/US]; 16 Laird Avenue, Rolla, MO 65401 (US). **O'KEEFE, Thomas, J.** [US/US]; 905 Southview Drive, Rolla, Missouri 65401 (US). **MORRIS, Eric** [US/US]; 40 Chardonnay, Irvine, CA 92614 (US). **YU, Pu** [US/US]; 513 Tipton Court, Rolla, MO 65401 (US). **HAYES, Scott** [US/US]; 205 A Rhodes Avenue, Rolla, MO 65401 (US).
- (74) Agents: **STEFFEY, Charles, E.** et al.; Schwegman, Lundberg, Woessner & Kluth, P.A., P.O. Box 2938, Minneapolis, MN 55402 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AF, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report:  
25 November 2004
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2004/065498 A3

(54) Title: CORROSION RESISTANT COATINGS CONTAINING CARBON PIGMENTS

(57) Abstract: A coating composition comprising an effective corrosion-inhibiting amount of a carbon pigment is provided. In one embodiment, the corrosion-inhibiting carbon pigment is further comprising other components such as extenders, including neutral to slightly acidic generating extenders and acidic generating extenders, are earth compounds, amino acids and amino acid derivatives, gelatin and gelatin derivatives, organic-based exchange resins, and combinations thereof, to enhance the corrosion resistance of the resultant coating film. In one embodiment, the carbon pigment is a surface-modified carbon pigment. The coating compositions have good adhesion to substrates such as metals, including aluminum and aluminum alloys.

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/001222

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C09D5/08

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C09D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 6 176 907 B1 (GLAUSCH RALF) 23 January 2001 (2001-01-23)</p> <p>column 1, line 58 - line 62 column 2, line 9 - line 64 column 3, line 31 - line 34 column 3, line 55 - line 67 ----- -/--</p>	<p>1,2,6,7, 10,11, 14-22, 27-31, 33, 37-41, 47-49, 64,66-68</p>

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

21 June 2004

Date of mailing of the international search report

22 OCT 2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Matthijssen, J-J

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/001222

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 41 15 625 A (RUETGERSWERKE AG) 19 November 1992 (1992-11-19)	1,14-22, 27,28, 47,48 49
A	column 2, line 25 - line 29 column 2, line 55 - line 63 claim 1; examples 4-6 -----	
X	EP 0 931 597 A (TOYO KOHAN CO LTD) 28 July 1999 (1999-07-28)  paragraph [0001] paragraph [0006] paragraph [0014] - paragraph [0021] -----	1,14-22, 27,28, 47-49

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2004/001222

## Box II Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1,2,6,7,10,11,14-22,27-31,33,37-41,47-49,64,66-68

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1,2,6,7,10,11,14-22,27-31,33,37-41,47-49,64,66-68

coating composition comprising a carbon pigment and a binder, a method of preparing and a method of coating with said composition

---

2. claim: 3

coating composition comprising a carbon pigment and an amino acid

---

3. claims: 4,5,8,9,42-46,69-73

coating composition comprising a carbon pigment and a rare earth compound and a method of coating with said composition

---

4. claim: 12

coating composition comprising an inorganic dispersed carbon black pigment

---

5. claim: 13

coating composition comprising a resin- or surfactant-dispersed carbon black pigment

---

6. claim: 23

coating composition comprising a carbon pigment and an inorganic binder

---

7. claims: 24-26

coating composition comprising a carbon pigment and an epoxy-based binder

---

8. claims: 32,34-36

coating composition comprising a carbon pigment and a sulphate extender

---

9. claim: 50

coating composition comprising at least two co-inhibitors

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

---

10. claims: 51-63

system of a coating composition comprising a carbon pigment  
and a pretreated substrate

---

11. claim: 65

method for preparing a coating composition comprising  
pre-dispersing a carbon pigment with a dispersant

---

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/001222

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6176907	B1	23-01-2001	DE 19721645 A1	26-11-1998
			AU 7761998 A	11-12-1998
			CA 2261586 A1	26-11-1998
			CN 1226912 T	25-08-1999
			DE 19880653 D2	23-09-1999
			WO 9853014 A1	26-11-1998
			EP 0915936 A1	19-05-1999
			JP 2000516297 T	05-12-2000
			KR 2000029479 A	25-05-2000
			TW 387922 B	21-04-2000
-----				
DE 4115625	A	19-11-1992	DE 4115625 A1	19-11-1992
-----				
EP 0931597	A	28-07-1999	AU 4318497 A	14-04-1998
			DE 69730511 D1	07-10-2004
			EP 0931597 A1	28-07-1999
			JP 3204988 B2	04-09-2001
			US 6248456 B1	19-06-2001
			CN 1233980 A ,B	03-11-1999
			WO 9812002 A1	26-03-1998
			KR 2000036173 A	26-06-2000
			TW 472089 B	11-01-2002
-----				